

#### MISCELLANEOUS NOTES

few years back came here. He mentioned that crocodile gall bladder cures cataract. Other local "medicine" includes hyena fat for painful joints and grey hornbill flesh for women in labour. In the rainy and winter season, Juma uses his fish nets for bird trapping.

Other crocodile habitat in Gujarat which should be surveyed by day and night for determining crocodile populations are:

- a) Bhadar Dam near Gondal, Saurashtra
- b) Machhu Dam near Wankaner
- c) Shetmuji Dam near Palitana
- d) Mahi River, Vanakbori Reservoir, Kira District
- e) Mahi River, Kadana Reservoir, near Rajasthan border

f) Powaghat Hills, lake at 1,500 ft, near Baroda

g) Nagmati River, Ranjit Sagar, Jamnagar water supply.

This year (1975) Ranjit Sagar dried up for the first time in 40 years. Three crocodiles were caught and transferred by the municipality; another 25 to 30 were reportedly killed by Wagrish, Polis and other people. There may have been no shooting during Lord Mahavira's anniversary year in Gujarat but the crocodile axe was most active.

Thanks are due to Sanat Chavan, Jeevan Lal and Jamsahib for all the help and kindness extended during my visit.

MADRAS CROCODILE BANK,  
MADRAS,  
June 9, 1977.

R. WHITAKER

#### 14. NOTES ON VOCALIZATION AND PROTECTIVE BEHAVIOUR IN THE MUGGER

In 1972 at the Madras Park we had six 2 year old, metre long mugger (*Crocodylus palustris*) in an enclosure with a metre long salt water crocodile (*C. porosus*). Catching the latter for transporting to another enclosure, it gave the crocodylian distress cry which is apparently an amplified (high-pitched and open-mouthed) version of the typical grunts they make from the hatching stage onward when alarmed or in response to another crocodile grunting (grouping mechanism).

On hearing the salt water crocodile's distress cry the mugger unhesitatingly charged me as I was holding the crocodile. Only a quick jump over the wall saved my toes. Later we recorded the distress cry and the young mugger zealously attacked the recorder. I learned to mimic the juvenile distress cry and was able to ob-

serve interesting response by wild mugger in several habitats. In Corbett National Park, with D. Basu now of the U.P. Crocodylian Project, we "called" crocodiles at night at the big pool near Gairal R.H. One mugger almost 3 metres came slipping and stumbling out of the river over the round boulders at quite a good pace, white mouth wide open and reflecting the light. It stopped 5 metres short of us and seemed to smell us or think twice about this artificial distress cry. After a few minutes it returned to the water. We had heard there were crocodiles at Malani Tal in Corbett. To prove it I waited there till after dark then climbed one of the overhanging jamun trees and called. Two adult mugger of 2½ to 3 m. swam to just below the tree. At Kilikudu Pond in Tamil Nadu, in the midnight company of several colleagues

we had seven wild crocodiles swimming toward us in response to a mimic distress cry when a medium sized mugger suddenly burst out of the bushes on the bank behind us and charged right past us, open mouthed. In the Gir at Hiran Lake, with Sanat Chavan, Park Warden we had a 3 metre mugger come out almost to our feet, again in response to the mimic juvenile distress cry. It only returned to the water when we tapped with a walking stick in front of its snout. In our experience mugger learn about this deception quickly and it would rarely work twice in the same place and sometimes not at all. It was especially dramatic in a new, fairly undisturbed population. In Sri Lanka last year, in the company of a Lanka herpetologist, R. Senanayake, we watched no less than 16

crocodiles approach us. Being in a low unprotected spot we hastily quit the area.

We have never heard mugger bellow as do alligators. Sometimes during threat displays (and mating) one or both participants will emit gargling growls, the inferior one (with upraised head in appeasement) usually ending in a typical crocodile grunt. The loudest sound we heard from a mugger was a wild caught female of just under 2 metres, caught in a net. Brought to shore and caught by the tail the crocodile emitted loud, deep distress cries with a tone similar to a calf's voice. The most typical mugger sounds are the grunts which the juveniles start using while still in the egg to communicate to the parent (and other eggs) their readiness to hatch.

MADRAS CROCODILE BANK,  
MADRAS,  
June 5, 1977.

R. WHITAKER  
Z. WHITAKER

#### 15. NOTES ON CAPTIVE BREEDING IN MUGGER (*CROCODYLUS PALUSTRIS*)

The 600 ft circumference breeding pond for mugger at the Madras Crocodile Bank holds approximately equal land and water area. The pond was dug to the water table and banks for basking were created with excavated sand. Clumps of pandanus and *Casuarina* and when necessary temporary palm leaf shelters provide shade. As far as possible, wild conditions have been simulated. In the rains the maximum water depth is 3 m and in the summer 1 m. Maximum and minimum air temperatures during the incubation period are 42°C and 28°C.

The enclosure supports 14 mugger; 8 females (3 adults) and 6 males (2 adults). Under normal circumstances this is a fairly compatible group and little serious fighting occurs.

1977 was the second successful breeding

year and notes on nests and nesting behaviour are given below.

##### *Nests and hatching:*

Both at the Crocodile Bank and at the Snake Park (one pair of adults) mating commenced from mid January.

On the night of 20th February the 13 year old female at the Snake Park laid 10 eggs in her nest 20 cm under the (laterite) soil. The eggs were transferred to hatching boxes on 15th April, and 6 hatched on 16th May.

On the night of 3rd March a 15 year old female ("Alpha") at the Crocodile Bank breeding pond laid 28 eggs under 26 cm of sand in a *Casuarina* clump in the north-west corner of the enclosure. Sand had been thrown